27. Cooled Cold Water Heat Exchanger + Cooled Cold Water Circulation Pumps (2D+1S) + Cooled Cold Water Storage Tank

PHEX-CCW-B2-01
PHEX-CCW-B2-02
CCWCP-B02-01/02/03
TANK-1/2/3/4/5

A) System Description

The system consists of 2 nos. heat exchangers with pressure independent control valves on the primary side, 5 nos. cold water storage tanks and cooled cold water circulation pumps (2 Duty + 1 Standby).

The function of the heat exchangers is to cool the water in the 5 nos. cold water storage tanks located at level B2. Water from building low rise chilled water system is circulated across the primary side of the cooled cold water heat exchanger. The secondary side is connected to the cooling coils in the cold water storage tanks. The chilled water in the secondary obtained through heat exchange from primary is circulated through the tank coils by the cold water circulation pumps, thereby cooling the water contained in them.

B) Heat Exchanger Control and Monitoring

BMS shall monitor individual tank temperatures **(QAE2112.015),** individual heat exchanger primary and secondary side inlet & outlet temperatures **(QAE2112.010),** primary and secondary side differential pressures (**QBE3000-D1)** across inlet & outlet pipes and also secondary side supply header and return header temperatures **(QAE2112.010)**.

Pressure Independent Control valves (PICV) installed on the primary side shall be modulated to maintain tank temperature at set point of 20°C (adjustable from BMS workstation). The PICV operation shall be interlocked with the run status of the cooled cold water circulation pumps such that they shall be modulated only if the run status is received from any of the cooled cold water circulation pumps. The PICVs shall be closed if none of the circulation pumps are running.

C) Cooled Cold Water Circulation Pumps monitoring

The following points shall be monitored by BMS

i. Pump in 'Auto' status (each pump)
ii. Pump run status (each pump)
iii. Pump trip status (each pump)

D) Alarms

The followings alarms shall be raised on BMS

S.NO.	ALARM	PRIORITY
1	Pump trip alarm (each pump)	High

E) TRENDS

The following points shall be trended at every 10 minutes of interval:

i. HEX primary side inlet temperature
ii. HEX primary side outlet temperature
iii. HEX primary side differential pressure
iv. HEX secondary side inlet temperature
v. HEX secondary side outlet temperature
vi. HEX secondary side differential pressure
vii. Hot side common header supply temperature
viii. Hot side common return supply temperature
ix. HEX cold side PICV command
x. HEX cold side PICV feedback